

ORIGINAL

LAW OFFICES

KOTEEN & NAFTALIN

1150 CONNECTICUT AVENUE

WASHINGTON, D.C. 20036

DOCKET FILE COPY ORIGINAL

TELEPHONE

(202) 467-5700

TELECOPY

(202) 467-5915

CABLE ADDRESS

"KOBURT"

BERNARD KOTEEN
ALAN Y. NAFTALIN
RAINER K. KRAUS
ARTHUR B. GOODKIND
GEORGE Y. WHEELER
HERBERT D. MILLER, JR.
MARGOT SMILEY HUMPHREY
PETER M. CONNOLLY
M. ANNE SWANSON
CHARLES R. NAFTALIN

GREGORY C. STAPLE
OF COUNSEL

RECEIVED

DEC 16 1993

December 16, 1993

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: RM-8388

Dear Mr. Caton:

Transmitted herewith, on behalf of TDS Telecommunications Corporation, are an original and nine (9) copies of its comments in the above-referenced proceeding.

In the event of any questions concerning this matter, please communicate with this office.

Very truly yours,

Margot Smiley Humphrey
Margot Smiley Humphrey

No. of Copies rec'd
List ABCDE

049

CCB

TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| Introduction and Summary | 1 |
| An NOI Proceeding Is Unnecessary | 3 |
| MFS Correctly States The Importance of Universal Service, But Seriously Understates the Importance of Support | 5 |
| Universal Service Should Not Be Deflated and Frozen by Definition | 7 |
| Support to LECs Providing Universal Service to High Cost Areas Should Continue | 9 |
| MFS Can Offer its Proposals for Universal Service Support in the Comprehensive Access Review Proceeding . . . | 13 |
| Conclusion | 13 |

DEC 16 1993

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

DOCKET FILE COPY ORIGINAL

Inquiry into Policies and Programs to Assure Universal Telephone Service in a Competitive Market Environment

RM-8388

The National Rural Telecom Association (NRTA), by its attorneys, submits these comments in response to the Petition of MFS Communications Company, Inc. [MFS] for a Notice of Inquiry and En Banc Hearing.

NRTA is an association of approximately 300 local exchange carriers that borrow under Rural Electrification Administration (REA) and Rural Telephone Bank (RTB) programs. These programs are designed to implement the national policy commitment to "assure the availability of adequate telephone service to the widest practicable number of rural users of such service." 7 U.S.C. § 921. Consequently, these programs, together with implicit and Commission-created universal support measures, help this Commission to fulfill its universal service mission under Section 1 of the Communications Act of 1934, 47 U.S.C. § 151:

to make available, so far as possible, to all the people of the United States a rapid, efficient, nation-wide and world-wide wire and radio communication service with adequate facilities at reasonable charges....

MFS asks the Commission to start a Notice of Inquiry (NOI) proceeding and hold an en banc hearing to look into a number of assertions about universal service. It purports to seek expeditious settlement of universal service issues in order to preserve universal service and "establish a road map for future services." However, MFS actually asks the Commission to conduct a two stage (comment cycle and oral hearing) preliminary proceeding before it even initiates the rulemaking proceedings the Commission already plans to conduct.

MFS also pays lip service to the importance of universal service and its responsibility to contribute. However, MFS devotes most of its attention to criticizing the carriers obligated to provide universal service and questioning the need for and effects of current support mechanisms.

MFS advocates a cramped definition of universal service and a callous disregard for high rural rates. It assumes that high cost support is inefficient, although careful economic analysis has shown that rural support should continue, despite growing pressures due to competition. Contrary to MFS's assumptions, economic analysis has also shown that support to LECs serving high cost rural markets is preferable to misguided efforts to establish a new welfare-like telephone support program with payments to individuals or competing carriers. The Commission

should broaden the contribution base, as MFS states. However, MFS can argue for its still-incomplete proposal in upcoming rulemaking proceedings.

The Commission should go forward with its announced plans to conduct a rulemaking proceeding to review universal service, preferably in connection with its comprehensive access charge review. Adding further preliminary layers of proceedings to a process that is already well underway will waste everyone's time and resources. The Commission's planned course will resolve universal service issues both more efficiently and more expeditiously.

An NOI Proceeding Is Unnecessary

The Commission has already begun to look at universal service issues by proposing a temporary capping mechanism for the Universal Service Fund (USF),¹ which has now been recommended by the Federal State Joint Board in CC Docket No. 80-286.² The Commission has announced its intention to complete a universal service rulemaking proceeding within two years.³ The Commission

¹ Amendment of Part 36 of the Commission's Rules and Establishment of a Joint Board, CC Docket No. 80-286, Notice of Proposed Rulemaking, FCC 93-435 (released September 14, 1993) (Interim Notice).

² Amendment of Part 36 of the Commission's Rules and Establishment of a Joint Board, CC Docket No. 80-286 Recommended Decision, FCC 93J-3 (released December 10, 1993) (Recommended Decision).

³ Interim Notice at ¶ 4. The Recommended Decision reports (¶ 10) that the Commission intends to deal with "a broad range of issues related to the USF and high cost assistance."

can consider any universal service issues it deems necessary in that proceeding or, better yet, in the comprehensive access charge rulemaking it plans to conduct. A broader rulemaking would allow the Commission to weigh and balance the interrelated access and support issues, as it has done in the past.⁴

Further preliminary inquiry stages would duplicate other efforts. The Joint Board has already conducted an inquiry about the universal service issues on its "short list" and the Commission's Access Reform Task Force has made public its analysis of the relevant issues.⁵ Congress is also considering legislative proposals that implicate universal service issues.⁶ Further preliminary proceedings under an NOI would waste the scarce resources of the Commission and parties and pointlessly delay the resolution of important support and access issues.

The Commission should take the efficient administrative route, reject the MFS request for another preliminary proceeding and go forward as planned with rulemaking proceedings, including the Joint Board review of universal service. If it appears that an en banc hearing would be helpful when the rulemaking record has been compiled, the Commission can schedule it then.

⁴ MTS and WATS Market Structure, CC Docket Nos. 78-72, 80-286, 2 FCC Rcd 2953 (1987).

⁵ FCC Access Reform Task Force, Federal Perspectives on Access Charge Reform, pp. 52-58, 66-70 (April 30, 1993) (Staff Access Paper).

⁶ See, e.g., S.1086 and H.R. 3636.

MFS Correctly States The Importance of Universal Service,
But Seriously Understates the Importance of Support

MFS states (pp. 1-2) that

the assurance of universal service is undoubtedly the single most significant public policy issue that the FCC will have to address as the market for local telephone service becomes increasingly competitive....

MFS also recognizes (ibid.) that responsibility for universal service devolves on the Commission under Section 1 of the Communications Act.

NRTA wholeheartedly agrees with these fundamental premises about universal service. NRTA also agrees with MFS (p. 7) that "[u]niversal service has been and remains an essential aspect of the Commission's pricing policies" and that (p. 5) financial support for universal service should be "assessed against all participants in a relevant market on an equitable, non-discriminatory and competitively neutral basis."

However, MFS primarily focuses its attention on a series of argumentative and unsupported assertions, meant to cast doubt on the current universal service mechanisms, objectives and recipients. Boiled down to its essentials, the theme of the MFS filing is that competition and universal service can flourish together, if the Commission narrowly redefines universal service and curtails support now flowing to the local exchange carriers (LECs) with universal service obligations for high cost areas (consequently raising rates for many or most of their customers).

Based on its radically reduced view of universal service, MFS claims (p. 2) that competition and universal service are

"highly compatible and not inconsistent." It sneers at LEC claims that competition will undermine universal service by undermining implicit support (p. 2).⁷ MFS seems to believe that the key to dealing with universal service is to diminish support and leave more to the marketplace.

Notwithstanding MFS's strenuous contentions, NRTA believes that the Commission's responsibility to protect the public interest will require it to tailor an effective and sustainable support program because there is unavoidable tension between competition and universal service. The Staff Access Paper (p. 28) candidly acknowledges that competition, an efficient advanced network, innovation and universal are "competing and sometimes conflicting goals" that need to be balanced. And economics professors John C. Panzar and Steven S. Wildman of Northwestern University have explained that high cost support will remain necessary in a competitive environment.⁸ Indeed, although MFS brushes off concerns that competition will undermine various support mechanisms (p. 2) and raise the cost of universal service support (p. 12), the Panzar-Wildman economic analysis

⁷ Despite its assertions of compatibility, MFS intends competition to undermine current support mechanisms. For example, MFS later makes the point (p. 12) that high cost support is "plainly incompatible with increasingly competitive markets." It even observes (ibid.) that competition might cause a regulatory response "to prevent further increases in the amount of the subsidy."

⁸ J. Panzar and S. Wildman, Competition in the Local Exchange: Appropriate Policies to Maintain Universal Service in Rural Areas, pp. 4-27 (1993) (Panzar-Wildman), attached to this filing as Exhibit A.

carefully shows how competition in rural areas will cause both of these adverse affects.⁹

Universal Service Should Not Be
Deflated and Frozen by Definition

The Clinton Administration has announced a bold forward-looking policy aimed at developing the U.S. telecommunications infrastructure and broadening universal service to include nationwide access to information resources.¹⁰ The National Telecommunications and Information Administration (NTIA) is holding a series of universal service hearings across the country to move towards implementation of this progressive policy thrust. According to The New York Times, Chairman Hundt has stated that reliance on corporate decisions will not assure schools and "ordinary Americans" of advanced communication benefits and that "market mechanisms will not lead to networks being built to the optimal social point."¹¹

⁹ Panzar-Wildman at 12-14, 27-33.

¹⁰ Information Infrastructure Task Force, The National Information Infrastructure: Agenda for Action, p. 4 (September 15, 1993). The policy sets objectives, including extend[ing] the "universal service" concept to ensure that information resources are available to all at affordable prices. Because information means empowerment, the government has a duty to ensure that all Americans have access to the resources of the Information Age.

¹¹ The New York Times, Business Section, December 6, 1993, p. D6.

In stark contrast to this vision of future "empowerment" for consumers, MFS (p. 9) wants the Commission to ask "what services are 'basic' enough to justify subsidization" and then to reduce support to the bare minimum necessary to obtain Plain Old Telephone Service (POTS) with touchtone technology.

In justification, MFS claims that "subsidies" have been limited to POTS in the past. However, neither the Communications Act nor Commission policies have attempted to define and limit support for the Public Switched Network (PSN) in this way. Indeed, cost and rate averaging, pooling and other traditional universal service mechanisms have supported the PSN's ability to carry voice and data traffic and to provide access to signalling and enhanced services, for example, by allowing cost recovery for upgrades that reach high cost areas. The mechanisms, in short, have been responsible for building a modern infrastructure in rural areas.

MFS would draw the line (p. 10) at "connection" to the network, saying that "services" should not be subsidized.¹² The "connection" MFS contemplates seems to be a much narrower concept

¹² It is not clear what MFS regards as a "subsidy." Since many support flows are related to inherently arbitrary jurisdictional allocations, they are actually just methods of assigning costs for recovery from the interstate jurisdiction in a way that helps to achieve policy goals.

MFS itself attacks (p. 14) supposed LEC "subsidy" claims that do not reflect revenues for services besides local exchange service, since the local loop provides access to multiple services. NRTA agrees that interexchange services, for example, should pay for some of the local loop costs because the loops generate toll service revenues. Such payments, as MFS recognizes, (p. 14), are not subsidies.

than the historical concept of universal service. For example, uniform toll rates would appear to involve service, rather than "connection," and thus to run afoul of the would-be MFS limits on universal service parameters. However, the Commission has long been committed to nationwide rate averaging.¹³

A static definition of universal service would sacrifice a major benefit of the universal service mandata in the Communications Act -- its flexibility to respond to changes in technology and customer needs. Without the dynamic approach in Section 1, universal service might have been frozen at multiparty service and electro-mechanical switching. Continued flexibility is necessary to ensure that rural areas do not lag behind urban areas, the danger recognized by NTIA in 1988¹⁴ and by the Congressional Office of Technology Assessment (OTA) in 1991.¹⁵ Accordingly, the Commission should decline the MFS request to translate the broad, dynamic statutory universal service mandate into a tightly circumscribed, marketplace-priced, lowest-common-denominator reality.

Support to LECs Providing Universal Service

¹³ See, e.g., Expanded Interconnection with Local Telephone Company Facilities, (CC Docket No. 91-141, Transport Phase I, Second Report and Order and Third Notice of Proposed Rulemaking, FCC 93-379, ¶ 18 (released September 2, 1993)).

¹⁴ U.S. Department of Commerce, NTIA Telecom 2000: Charting the Course for a New Century, pp. 87-97 (1988).

¹⁵ U.S. Congress, OTA, Rural America at the Crossroads: Networking for the Future, p. 79 (1991).

to High Cost Areas Should Continue

MFS would also terminate support for high cost areas, claiming (pp. 10-11) that rural areas should generally "pay their own way for telephone service...", regardless of the level of cost-based rates. Instead, MFS would substitute payments to subscribers on the basis of low income or disability.

Support for high cost providers of universal service must continue if the Administration's and the Chairman's vision of a ubiquitous modern public switched network infrastructure providing access to information is to be realized. Payments to low income users will not develop the infrastructure necessary to achieve this sound objective, especially in areas which cannot support even a single network on a stand-alone basis because low traffic volume, resulting from low subscriber density, limits available market revenues. For these rural areas, MFS's advocacy of "competitive choices for all Americans" (p. 3) and market-driven service competition over the "basic infrastructure needed to connect customers to the network" (p. 10) will prove illusory: The "benefit" for rural customers will be higher prices, a less capable infrastructure and less information access.

Economic analysis also undermines the contention (p. 10-12) that high cost support should be supplanted by support "targeted to individual subscribers." Professors Panzar and Wildman have concluded from their economic analysis that

[t]ransferring rural support flows from the franchised LEC serving rural areas to all competing carriers on a per-customer basis [for service to qualifying subscribers] would

increase support flows and encourage inefficient bypass.¹⁶

Indeed, the economists warn, such support can actually be used "to attract high volume customers through below-cost pricing, rather than to defray costs of serving all rural customers."¹⁷

Thus, economic theory does not support the MFS claim that reduced high cost support will help newcomers to compete on the basis of their own costs. Moreover, MFS ignores that the incumbents alone have universal service and carrier of last resort obligations and other regulatory burdens. Entrants with virtually no obligations do not compete on equal terms against regulated LECs.

MFS also alleges that high cost support interferes with introduction of more efficient technologies, such as BETRS. However local exchange carriers sought BETRS frequencies for the express purpose of providing more efficient service to high cost areas. LECs have actively sought PCS policies that will permit them to incorporate this new technology, since it can increase their cost effectiveness and ability to meet customer needs. Thus, MFS relies only on theory -- not actual LEC performance -- for its contentions about rural obstacles to service efficiency.

MFS argues that "subsidies" to high cost rural telephone companies keep rates artificially below urban rates. However,

¹⁶ Panzar and Wildman at 15.

¹⁷ Id. at 15-22. They point out that the basic outcome would be the same if payments were made directly to rural telephone customers. Id. at 22-24.

rural customers typically can reach only a small fraction of the lines that urban customers can reach through local calling. It is important to look at total telephone bills, rather than focusing only on local rates: Local rates for rural customers often do not even include calls to the family doctor, school, library or suppliers. Since there are "external benefits" or "externalities" that make rural support efficient, MFS's notion that subsidies are inherently inefficient is at odds with sound economic theory. Indeed, network externalities belie MFS's contention (pp. 11-12) that rural subscribers should bear the full burden of the higher costs of rural service.¹⁸ MFS assumes (p. 11-12), but has not shown, that support mechanisms for rural areas stifle efficiency and beneficial competition. Dr. Panzar has, in contrast, shown that below cost pricing in rural areas may be necessary to achieve both economic efficiency and social goals.¹⁹

¹⁸ See, e.g., J.C. Panzar, The Continuing Role for Franchise Monopoly in Rural Telephony, pp. 3-4 (1987); J.C. Panzar, The Economics of Telecommunications Infrastructure Enhancement (1990) (network externalities exist because each customer's decision does not take into account benefits to the network as a whole). Indeed, network externalities and the reality that every interstate call has two participants -- the calling and called parties -- also illustrate why MFS's contention (p. 11) that high cost support is the only "subsidy" based on "geography" would be irrelevant even if it were true. Of course, current support is based on high costs (i.e., costs above the national average), not location, so the MFS assertions have even less value.

¹⁹ Dr. Panzar's 1987 study, n. 18, above, demonstrated that it is more efficient for rural LECs to provide service without competition. With competition, he showed, both service and rates would suffer (pp. 7-11) (at least absent a workable support mechanism). Thus, MFS is off-base in its conclusory declaration (p. 2) that it is "the Commission's bedrock responsibility" to keep

MFS Can Offer its Proposals for Universal Service Support in the Comprehensive Access Review Proceeding

Despite the economic fallacies of most theories advanced by MFS, NRTA agrees that the Commission should adopt a viable, competitively neutral foundation for universal service as soon as possible. Current funding methods provide unregulated new entrants a substantial competitive advantage. This, in turn, creates uneconomic entry signals.

The best way to resolve this serious problem expeditiously is for the Commission to proceed with its access and universal service rulemaking proceedings. MFS can present its proposals at the rulemaking stage for evaluation by all parties on the record.

The request by MFS for review of Eli Noam's proposal is obviously premature. MFS says (pp. 20-21) that the plan has not even been released in final form, and MFS itself has seen only a discussion draft and believes that the plan may be compatible with what MFS seeks. MFS will no doubt be in a better position to explain what action it advocates when it responds to the upcoming Commission rulemaking notices.

Conclusion

In the name of expediting resolution of universal service issues to guide access review, MFS has suggested a duplicative NOI proceeding that could actually delay resolution of universal service and access issues. In addition, MFS has attacked the

LECs from trying to protect their operations from competition, a result MFS presumes is in conflict with the statutory goals of efficiency and reasonable prices.

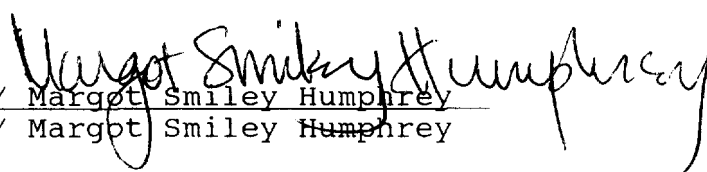
present universal support system on the basis of a laundry list of unsupported assumptions and assertions. Analysis by economists establishes that the MFS complaints are unfounded.

Therefore, the Commission should reject the MFS request for an NOI, go forward with rulemaking on universal service and access issues and wait until the record in those proceedings is before it to decide whether an en banc hearing will illuminate the issues.

Respectfully submitted,

TDS TELECOMMUNICATIONS CORP.

By:


/s/ Margot Smiley Humphrey
/s/ Margot Smiley Humphrey

KOTEEN & NAFTALIN
1150 Connecticut Avenue, N.W.
Suite 1000
Washington, D.C. 20036

Its Attorneys

December 16, 1993

Exhibit A

Competition in the Local Exchange: Appropriate Policies to Maintain Universal Service in Rural Areas

by

John C. Panzar¹ and Steven S. Wildman²

Northwestern University

Introduction

The past year has seen a flurry of federal and state initiatives to reform regulations by expanding local exchange telecommunications competition, including the possibility of exchange competition in rural areas.³ While the enthusiasm for unbundling and deregulation has

¹ Louis W. Menk Professor of Economics, Northwestern University.

² Associate Professor of Communication Studies, and Director, Program in Telecommunications Science, Management and Policy, Northwestern University.

³ See, e.g., "Rules Adopted for Expanded Interconnection for Switched Transport," FCC News Release (Aug. 3, 1993) (requiring local exchange carriers to provide physical collocation at their central offices and other locations of other parties' switched access transmission facilities); Telecommunications Infrastructure Act of 1993, S.1086 (removing barriers to entry into any interstate or intrastate telecommunications service); Proceeding on Motion of the Commission Regarding Comparably Efficient Interconnection Arrangements for Residential and Business Links, Case 91-C-1174 (N.Y. PSC Dec. 18, 1992); Proceeding on Motion of

(continued...)

been driven largely by perceived benefits from the competitive provision of exchange services in larger urban areas, the suitability and impacts of these proposals for rural areas and smaller exchanges has not been examined with any care.

In this paper we examine the implications of exchange competition for telephone service in rural areas. In the analysis that follows we consider: (1) Whether the support flows that have sustained rural telephony in the past are still needed today; (2) Funding mechanisms for supporting rural service that are compatible with local exchange carrier ("LEC") competition in urban areas; (3) The suitability of competition for rural areas served by LECs that are recipients of this support; and (4) Principles for setting the terms on which LECs serving rural areas should use the advanced capabilities of LECs located in urban areas, such as SS7, when LECs face competition in the urban areas.

Our analysis of these issues shows that the traditional justifications for support of rural telephony are still valid; new rural support mechanisms that are compatible with exchange competition in urban areas are both needed and feasible; that exchange competition in

⁹(...continued)

the Commission to Review Regulatory Policies for Segments of the Telecommunications Industry Subject to Competition, 103 P.U.R.4th 1 (N.Y. PSC 1989).

rural areas may promote inefficient investment and operations and increase the burden on ratepayers in urban areas who are the source of rural support flows; and efficient pricing rules are likely to require making available to LECs serving rural areas certain advanced components of LEC infrastructure located in urban areas under different arrangements than firms competing with urban LECs in urban areas. In addition, competition in rural exchanges really becomes a vehicle for shifting a portion of the cost burden of supporting rural telephony from high-volume, low-cost rural ratepayers to ratepayers elsewhere in the system, as well as a force which may promote inefficient investments and operations.

In particular, the paper makes the following points and recommendations:

- The tradition of support for rural telephony should be maintained. The higher costs of service in rural areas discourage the provision of, and subscription to, rural telephone services. Transfers that support the provision of rural services are justified both for the benefits to rural customers and because an upgraded, advanced network that includes rural subscribers is more valuable to all telephone customers.
- Increased competition in rural areas would be inefficient and could threaten universal service. A combination of rate averaging and "provider of last resort" obligations makes LECs serving rural areas vulnerable to "cream skimming" competition. Loss of high-volume business customers would drive up the cost of service to the rural LEC's remain-

ing residential customers. This would increase the industry-wide burden of financing the transfers supporting service to these customers.

- Some traditional rural support mechanisms are not compatible with competitive urban exchange service. Support mechanisms should be competitively neutral and not distort usage of LEC facilities. One such support mechanism is "bulk billing," which collects support payments from outputs such as interexchange services rather than from inputs such as access services. In addition, support mechanisms based on "Efficient Component Pricing" principles might also be applied to maintain urban services' contributions to rural services while promoting exchange competition in urban areas.
- The transition to increased competition in urban markets should be managed in such a way that regulators continue to recognize the unique "co-carrier" relationship between rural and urban LECs. In particular, LECs serving rural areas must be allowed to share advanced LEC telecommunications infrastructure located in urban areas on terms that recognize the complementarity of rural and urban LEC services, as opposed to the substitutability of services offered by urban LECs and their urban competitors.

**I. Economic Efficiency and Universal Service
Require Continuing Support for Rural LECs and
the Preservation of their Local Franchise**

The policies and programs that have supported rural telephony in the past were based on the recognition that rural LECs must provide service in very different circumstances from those faced by urban LECs. These circumstances as well as "network externalities"

continue to favor support for rural telecommunications services and preservation of rural LEC franchises.

Cost and Income Conditions. Smaller and more geographically dispersed populations, relatively few high-usage business customers, longer loops, and a technology characterized by significant economies of scale with respect to usage and number of subscribers, combine to make telephone service much more costly in rural than in urban areas -- in many cases prohibitively so -- without external sources of support. Adverse cost conditions are compounded by generally lower incomes and lower per capita spending power in rural areas. Unwilling to deny rural residents access to vital telecommunications services at a reasonable price, regulators and lawmakers have established a system of support flows that make possible the provision of modern telephone service in rural areas.

In designing policies for rural telephony, it is important for regulators to recognize that the basic economic factors⁴ that historically

⁴ For example, the natural monopoly characteristics of rural local exchanges mean that society's resources are more efficiently allocated if one common carrier per rural area provides the infrastructure to carry all of the rural area's relatively limited amount of traffic.

have justified public support for rural telephone service are largely unchanged today and will continue into the foreseeable future.⁵

Rural areas have, on average, 18.8 people per square mile, compared with 332.3 in urban areas. Correspondingly, LECs borrowing from the Rural Electrification Administration ("REA") have an average density of only six subscribers per route mile, substantially lower than the average density of 130 subscribers per route mile for the Bell Operating Companies ("BOCs"), who provide service primarily in urban areas. In addition, businesses (which have higher call volumes than residences) account for 33 percent of the access lines for the BOCs, compared to only 18 percent of access lines for the small and mid-size LECs participating in the National Exchange Carriers Association ("NECA") interstate access tariff and 17 percent for REA LECs. These factors are reflected in traffic statistics. Tier 1 LECs (those with at least \$100 million in annual revenues) average over 30 percent more minutes-of-use ("MOU") per line and over ten times more MOU per central office than the much smaller NECA LECs.

⁵ The sources for the data describing cost and market conditions in rural areas are presented in Appendices A and B. Unless otherwise indicated, figures reported are from Appendix A.

Given large economies of scale and density, it should not be surprising that telephone costs are much higher in rural than in urban areas. The monthly average loop cost per access line is \$45.50 for LECs with less than 1,000 access lines,⁶ but only \$18.90 for Tier 1 LECs, which have on average 1,284,500 access lines.⁷ Similarly, comparing costs per minute for transport services, Southwestern Bell found costs to be almost ten times higher for its lowest volume offices (\$.020286) than for its highest volume offices (\$.002040). One consequence is that NECA LECs' local switching rates are four times higher than those charged by Tier 1 LECs.

Adverse cost conditions are compounded by generally lower incomes and per capita spending power in rural areas. In 1990 the average per capita income in the metropolitan statistical areas was \$15,442, compared to only \$10,904 in non-metropolitan areas.⁸ Thus, urban areas have about 25 times more income available per square mile to support telephone infrastructure (people per square mile times per capita in-

⁶ This figure is for LECs establishing rates based on studies of their costs as opposed to using average schedules.

⁷ Fourth Quarter 1992 ARMIS Report 43-01, Line 2150 (access lines as of Dec. 31, 1992).

⁸ See Appendix B.